

FIG.1A

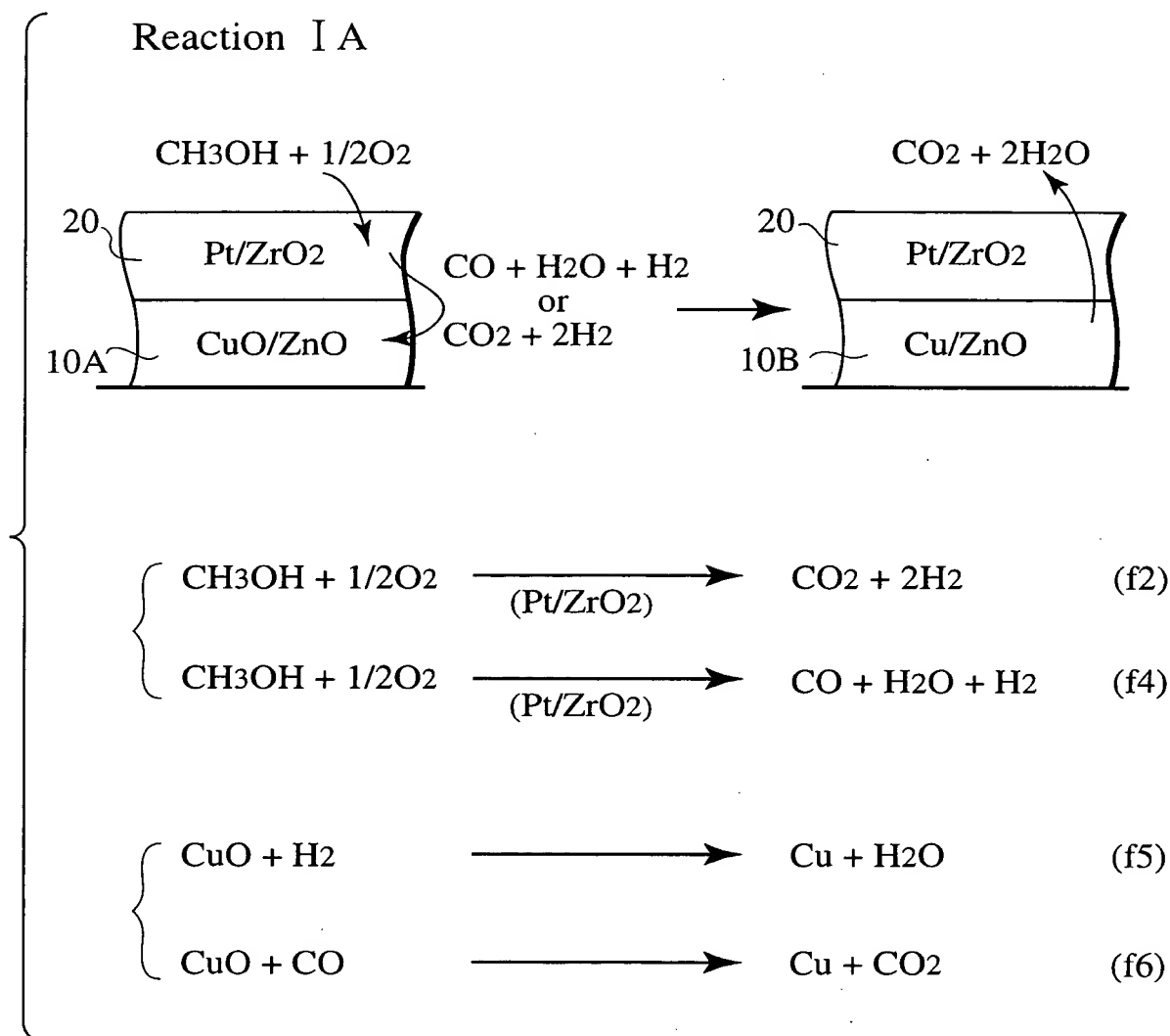


FIG.1B

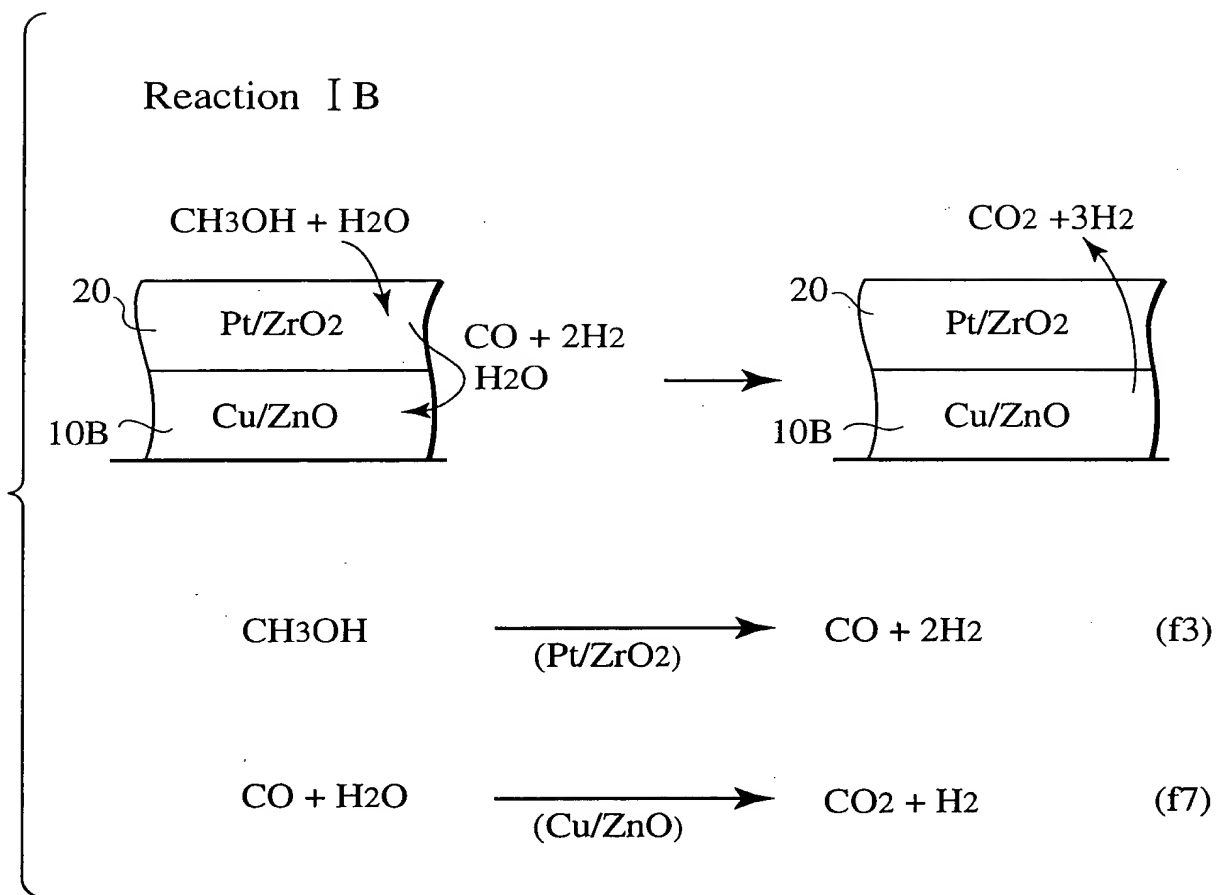




FIG.1C

Reaction I C

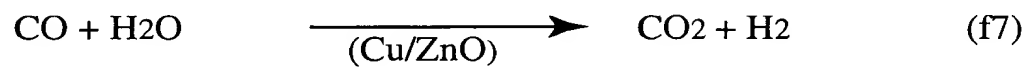
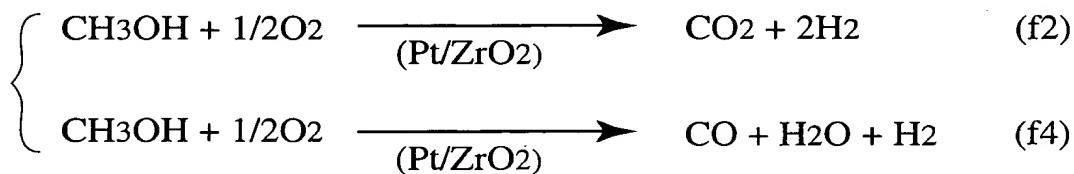
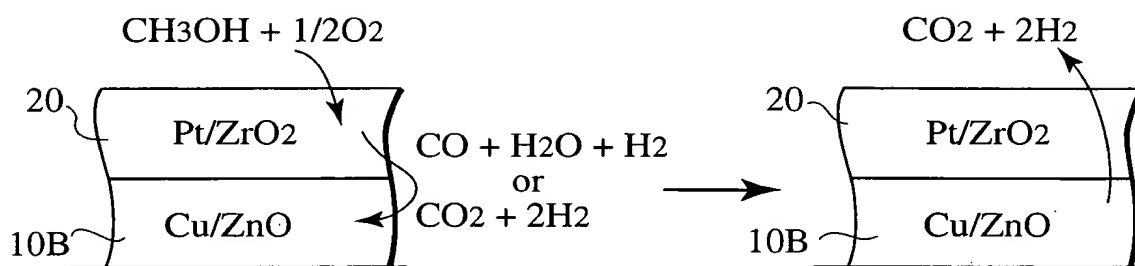


FIG.2A

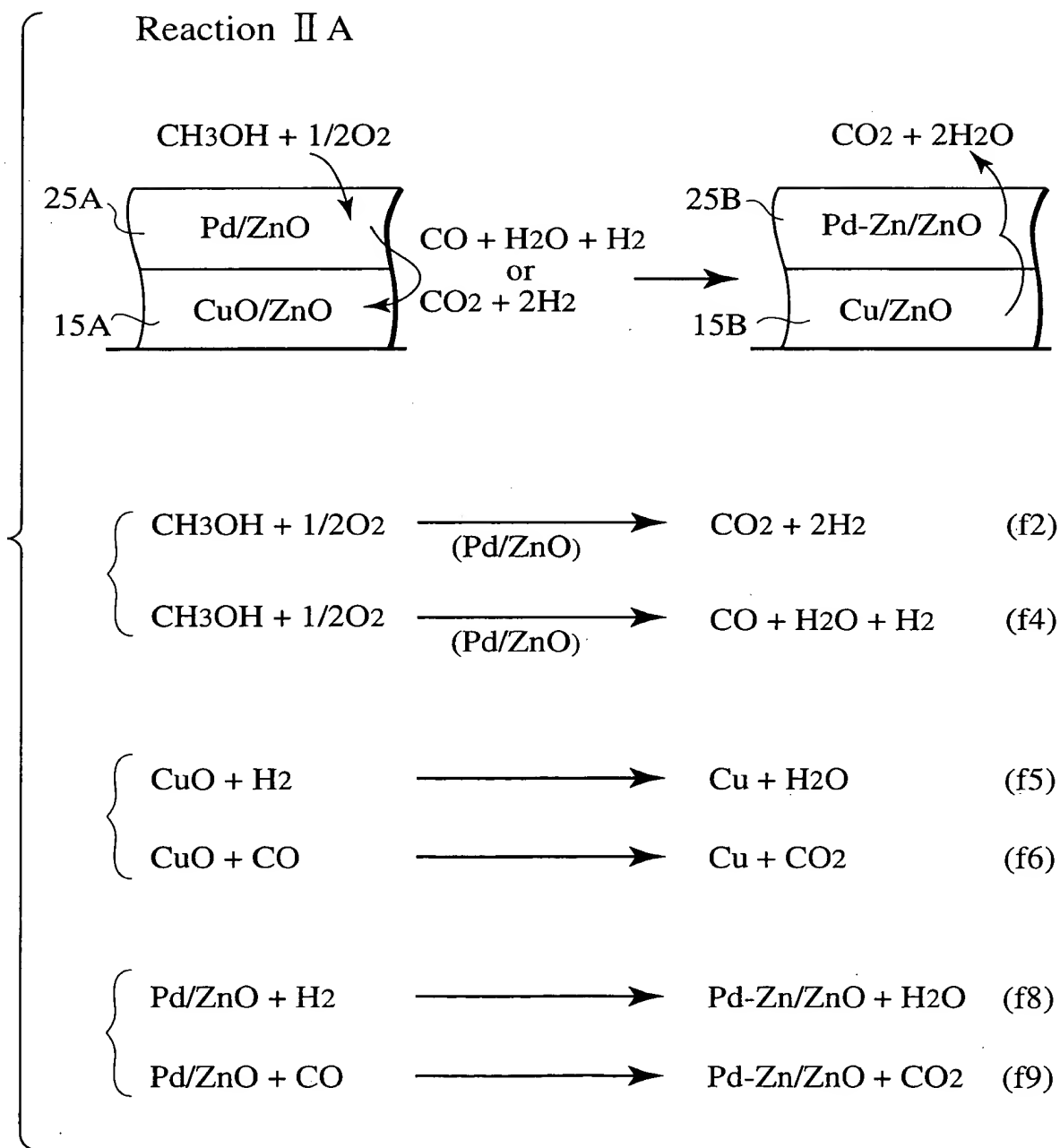


FIG.2B

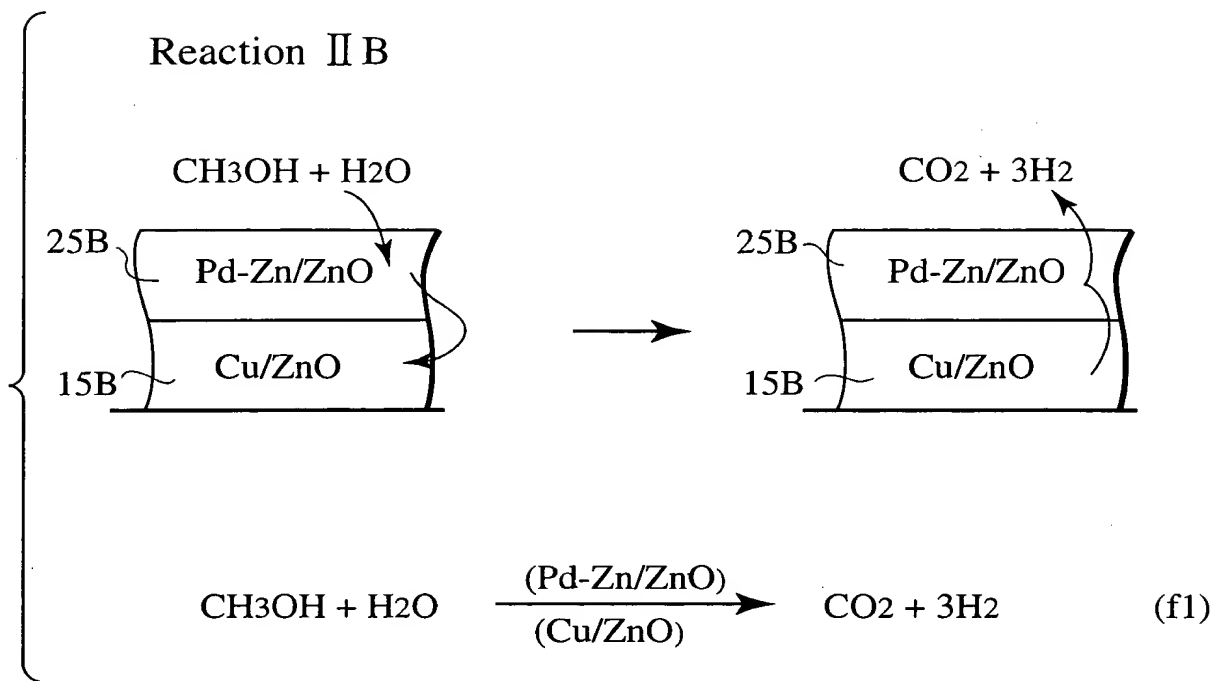


FIG.2C

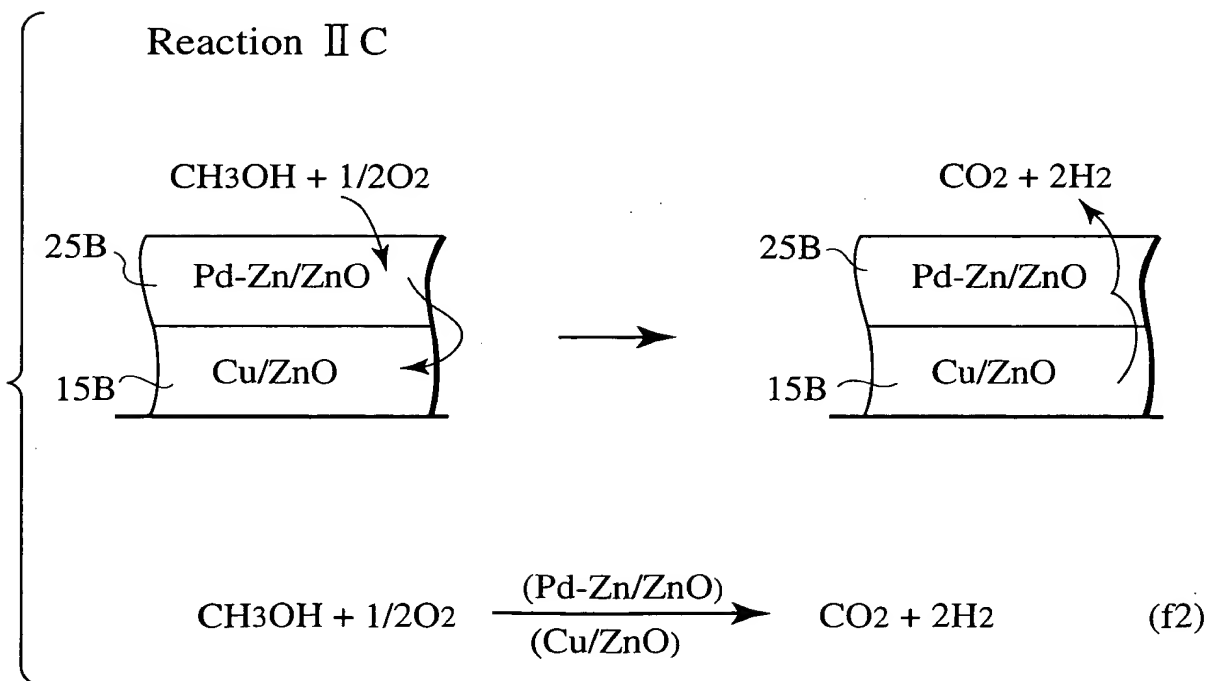


FIG.3A

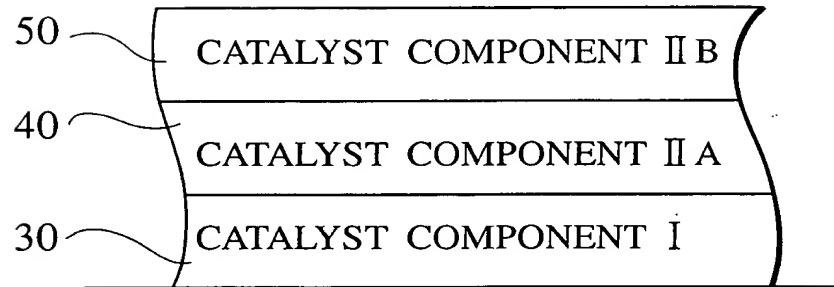
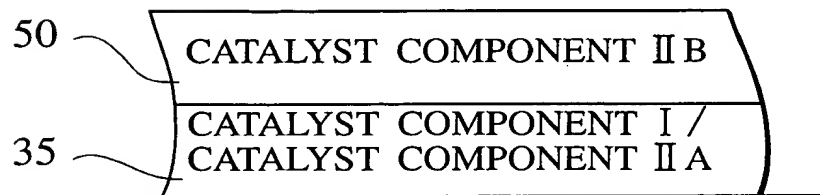


FIG.3B



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FIG.4A

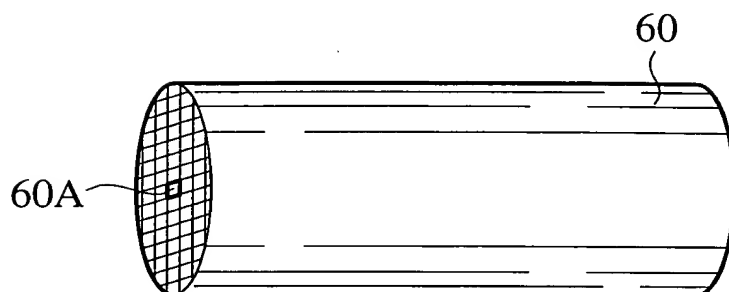


FIG.4B

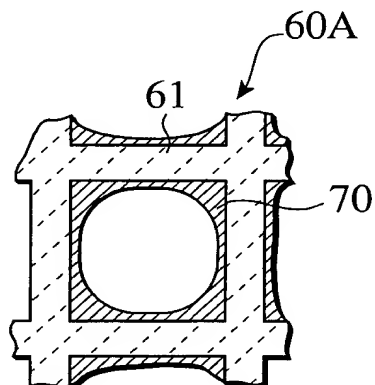


FIG.5

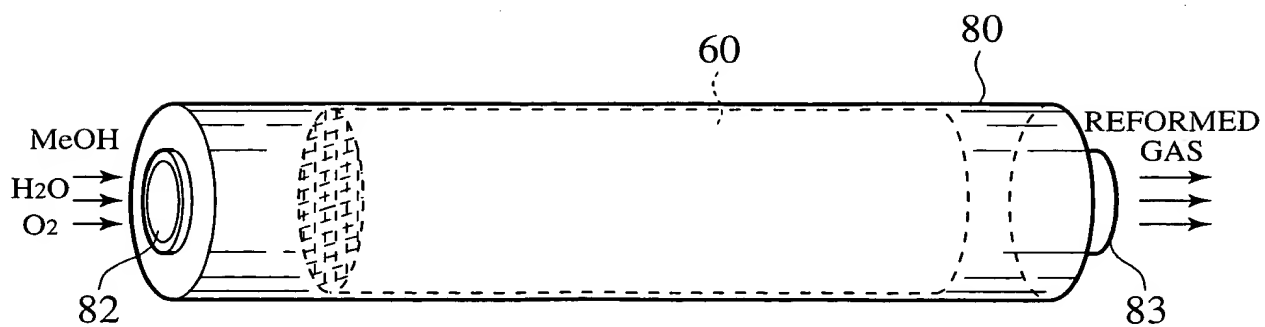


FIG.6

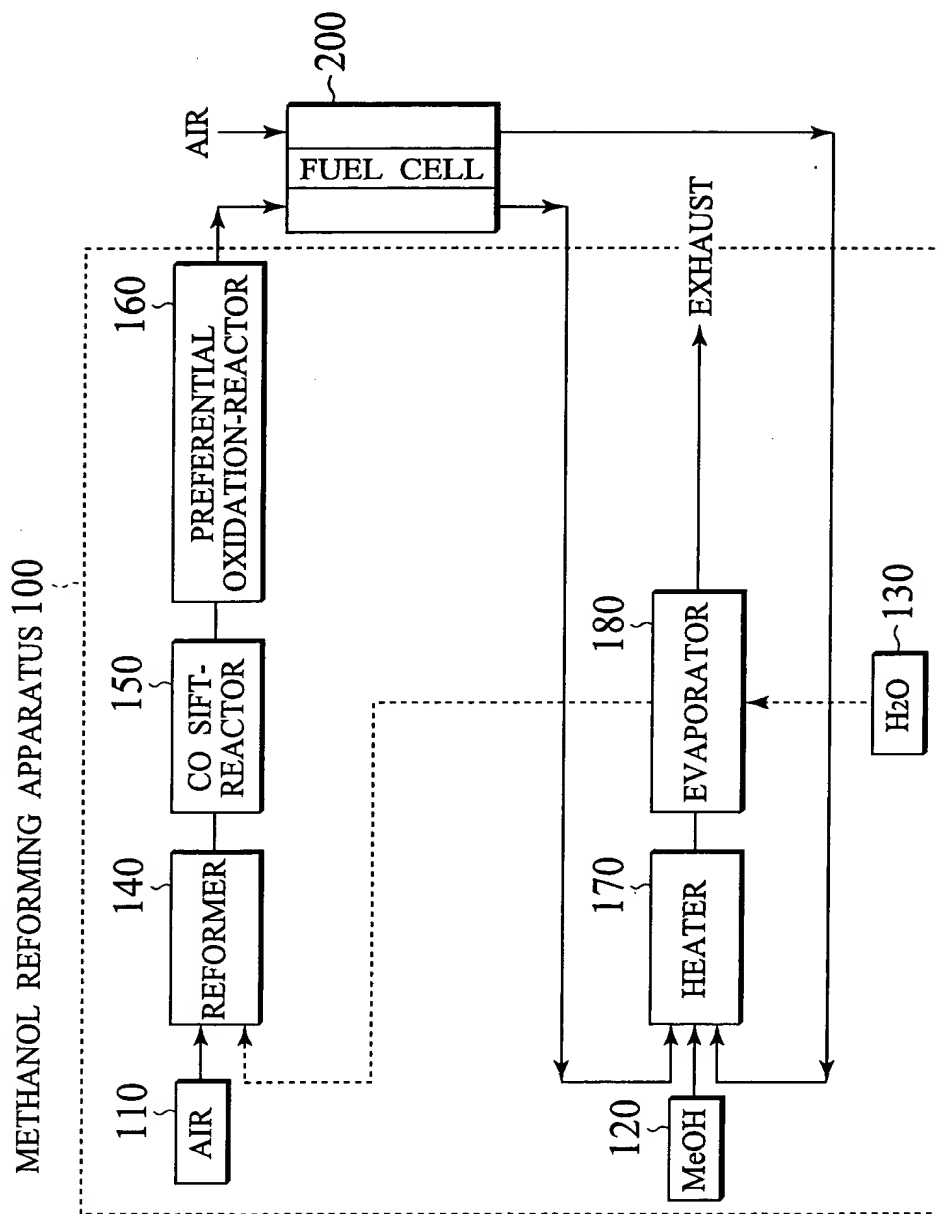




FIG.7

Table.1

Example	Composition of catalyst			Reaction time (min)	Co concentration (%)	Reformation rate (%)
	1st catalyst layer	2nd catalyst layer	3rd catalyst layer			
example 1	CuO-ZnO	Pd/ZnO		0.5 1 5	11 0.9 0.9	98 100 100
example 2	CuO-ZnO	Pd-Zn-CeO <sub>2</sub> -ZrO <sub>2</sub>		0.5 1 5	1 0.9 0.9	98 100 100
example 3	CuO-ZnO	Pt/Al <sub>2</sub> O <sub>3</sub>	Pd/ZnO	0.5 1 5	1.5 1.5 1.5	100 100 100
example 4	CuO-ZnO	Pt/Al <sub>2</sub> O <sub>3</sub>	Pd-Zn-CeO <sub>2</sub> -ZrO <sub>2</sub>	0.5 1 5	1.5 1.5 1.5	100 100 100
example 5	Pt/Al <sub>2</sub> O <sub>3</sub>	CuO-ZnO	Pd/ZnO	0.5 1 5	1.3 1.3 1.3	100 100 100
example 6	Pt/Al <sub>2</sub> O <sub>3</sub>	CuO-ZnO	Pd-Zn-CeO <sub>2</sub> -ZrO <sub>2</sub>	0.5 1 5	1.3 1.3 1.3	100 100 100
example 7	Pt-Al <sub>2</sub> O <sub>3</sub> +CuO-ZnO ※1)			0.5 1 5	1.2 1.4 1.4	90 95 99
comparative example 1	Pt/Al <sub>2</sub> O <sub>3</sub> ※2)	CuO-ZnO ※3)		0.5 1 5	5.1 6.2 6.5	99 100 100

※1) These components of catalyst are mixed in a single layer.

※2) This component is arranged in the upper stream.

※3) This component is arranged in the lower stream.

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FIG.8

Table.2

Example	Composition of catalyst		After 50hr-reaction	
	1st catalyst layer	2nd catalyst layer	Co concentration (%)	Reformation rate (%)
example 1	CuO-ZnO	Pd/ZnO	1.2	98.5
example 2	CuO-ZnO	Pd-Zn-CeO <sub>2</sub> -ZrO <sub>2</sub>	1.1	99.5
comparative example 2	CuO-ZnO	—	0.9	83.3